UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802- 4213

In Response Refer To:
151422SWR2005SR20288:GRS

FEB 11 2005

Fari Tabatabai, D. Env.
Chief, Environmental Planning Section
Army Corps of Engineers
333 Market Street
San Francisco, California 94105

Dear Ms. Tabatabai:

Enclosed is NOAA's National Marine Fisheries Service's (NMFS) supplemental biological opinion for the reinitiation of consultation on the Upper Guadalupe River Flood Control Project in San Jose, California (Project). The supplemental opinion addresses your written request of July 20, 2004, to reinitiate consultation on the proposed construction of the Project over a 9-year period. The enclosed supplemental biological opinion also addresses revisions to the Project associated with the Project's Waste Discharge Requirements and Water Quality Certification issued by the San Francisco Bay Regional Water Quality Control Board (Water Quality Certification). During development of the Project's Water Quality Certification, the Corps of Engineers (Corps) and the Santa Clara Valley Water District (SCVWD) added elements to the Project which include the creation of floodplain benches, channel widening, and other actions to improve stream functions within the Project area in the Guadalupe River.

The original biological opinion issued on April 18, 2000, analyzed the effects of the proposed Upper Guadalupe Flood Control Project on Central California Coast (CCC) steelhead (*Oncorhynchus mykiss*). Concurrently, NMFS provided Essential Fish Habitat (EFH) Conservation Recommendations pursuant to the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) for fall-run Chinook salmon in the Guadalupe River. During the initial consultation, the Project's construction was scheduled to occur in phases over a 25-year period. The Corps and SCVWD have proposed to revise the actual construction period to occur over a 9-year period. In addition, the Project was modified in 2002 and 2003 to include several channel enhancement features, including an excavated floodplain bench along portions of the east bank of the Guadalupe River.

Based on our review of the proposed revisions to the Project and the anticipated levels of take, the supplemental biological opinion concludes that the proposed revisions to the Project are not likely to jeopardize the continued existence of the threatened CCC steelhead. The analysis in this opinion supplements the analysis completed in the April 18, 2000, opinion and is intended to complement, not replace, that opinion. NMFS believes the action is likely to result in take of CCC steelhead, and therefore, an incidental take statement is included with this supplemental biological opinion. The incidental take statement replaces the incidental take statement issued for this project on April 18, 2000. EFH Conservation Recommendations provided under section 305(b)(2) of the MSFCMA on April 18, 2000, have not been modified or changed as a result of the proposed revisions to the Project. Thus, EFH Conservation Recommendations for the Project are not repeated here. The Project area and the entire Guadalupe River Watershed are excluded from the proposed designation of critical habitat for two evolutionarily significant units (ESUs) of Chinook salmon and five ESUs of anadromous steelhead (69 FR 71880).

Thank you for your continued coordination and cooperation on this project. If you have questions regarding the supplemental biological opinion, please contact Gary Stern of my staff at 707-575-6060.

Sincerely,

Rodney R McInnis

Rodney R. McInnis
Regional Administrator

Enclosure

cc:
ARA-PRD, NMFS
Dave Chesterman, Santa Clara Valley Water District
Kent Aue, California Department of Fish and Game
Steven Schoenberg, U.S. Fish and Wildlife Service

Enclosure

SUPPLEMENTAL BIOLOGICAL OPINION

ACTION AGENCY:	Department of the Army, Sacramento District Corps of Engineers
ACTION:	Upper Guadalupe River Flood Control Project, San Jose, California
CONSULTATION CONDUCED BY:	National Marine Fisheries Service, Southwest Region
FILE NUMBER:	151422SWR00SR589
DATE ISSUED:	____________________

I. CONSULTATION HISTORY

The Army Corps of Engineers (Corps) in cooperation with the Santa Clara Valley Water District (SCVWD) proposes to construct the Upper Guadalupe River Flood Control Project (Project) in San Jose, California. The Project is designed to provide 100-year flood protection along 6.4 miles of the Guadalupe River between Interstate 280 in downtown San Jose and Blossom Hill Road. Formal consultation pursuant to section 7 of the Endangered Species Act (ESA) of 1973, as amended, (16 U.S.C. 1531 *et seq.*) for the Project was completed by the Corps and NOAA's National Marine Fisheries Service (NMFS) in the spring of 2000. NMFS issued a biological opinion for the Project on April 18, 2000. Project construction was scheduled to begin in 2005, but Federal funding for the project has been delayed and the date for initiation of construction is unknown[1].

The consultation and biological opinion issued in 2000 analyzed the potential effects of the construction of the Locally Preferred Project described in the Final Environmental Impact Report/Statement (EIR/S) dated November 1999. The original Locally Preferred Project design includes construction of flood bypass channels adjacent to several reaches of the active Guadalupe River channel to convey flood flows around the existing riparian corridor and reduce erosive flood flows in the Guadalupe River channel. Some reaches also include channel widening, construction of levees, and construction of floodwalls to convey the 100-year flood flow. Due to marginal and potentially lethal water temperature conditions for juvenile anadromous salmonids in the Guadalupe River during the late spring and summer months, the Project was originally designed to minimize loss of existing riparian vegetation. However, additional information became available during 2002 and 2003 indicating a need to address other stream channel deficiencies in Guadalupe River's Project reaches. Through the Guadalupe Watershed Integration Work Group (GWIWG) design modifications to improve stream channel functions and habitat conditions for fish and wildlife were developed. The goals of the design modifications include improving bank stability, reducing bed incision, improving streambed substrate conditions, increasing fish habitat diversity and complexity, and decreasing required maintenance. As a result of the efforts of the GWIWG, the Corps and the SCVWD have modified the proposed Project to include opportunity-based channel modification that may include excavated east bank floodplain bench features, east and west bank biotechnical improvements, grade control structures, and other instream fish habitat improvement structures. Opportunities to include these features will be identified through several on-going studies regarding channel, soil and other conditions in the Guadalupe River. These features will be located and designed based on these studies prior to the start of construction in these reaches.

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[1] Since NMFS issued the original biological opinion for this project, one fish passage barrier has been fixed. The majority of project construction awaits future funding.

During the fall and winter of 2003, NMFS and the Corps evaluated recent water temperature monitoring results from the Guadalupe River and the Corps' consultant recalibrated the Guadalupe River stream temperature model. The consultant's water temperature model (known as JSATEMP) was used to compare an accelerated construction schedule for the Project to the proposed 25-year construction schedule. By letter dated January 7, 2004, to the Corps, NMFS presented a finding based on the revised modeling results that the accelerated construction schedule does not increase the level of potential temperature impacts to anadromous salmonids and it may even improve temperature conditions during critical outmigration periods.

On June 17, 2004, the Corps presented to NMFS the site-specific design and construction plans for a fish passage improvement project at Stream Gage 43 on Guadalupe Creek along Hicks Road in the City of San Jose. The original Project proposal included the remedy of fish passage barriers in the Guadalupe watershed, but specific project details were not available during the initial section 7 consultation. By letter dated October 4, 2004, NMFS concurred with the proposed design of the Stream Gage 43 fish passage project and determined that project construction/operation would not result in impacts to threatened Central California Coast (CCC) steelhead beyond those considered in the April 18, 2000, biological opinion for the Project.

On July 20, 2004, the Corps reinitiated consultation on the Project to request modification of the proposed construction schedule. Based on additional thermal modeling and other updated information, the Corps has proposed to construct the Project over a 9-year period instead of phases of construction over a 25-year period. Term and condition 2(f) in the incidental take statement attached to the April 18, 2000, biological opinion specifically requires the Corps to reinitiate consultation if the construction schedule for the Project is shortened. A complete administrative record of this consultation is on file at the NMFS Santa Rosa office.

II. DESCRIPTION OF THE PROPOSED ACTION

The Upper Guadalupe River Flood Control Project is proposed for construction by the Corps and SCVWD along 6.4 miles of the Guadalupe River in San Jose, California, between Interstate 280 to Blossom Hill Road. The Project also includes construction on 0.3 miles of Canoas Creek between the Guadalupe River and the end of Nightingale Avenue; 1.0 mile of Ross Creek between the Guadalupe River and Jarvis Avenue; and the removal of four existing fish barriers upstream of the Project. The Project consists of channel modifications and maintenance along eight reaches of the Guadalupe River. Each reach will be modified or a flood bypass constructed adjacent to the active channel to contain the computed 100-year frequency flood event and prevent flood damages to surrounding neighborhoods. The project also includes four fish barrier removal projects in the Guadalupe River watershed as offsite mitigation. The Corps and SCVWD will jointly fund and construct the Project. As noted above, construction was scheduled to begin in 2005, but Federal funding for the project has been delayed.

Major elements of the Project remain unchanged from the Locally Preferred Project presented in the November 1999 EIR/S and are incorporated here by reference to NMFS' April 18, 2000, biological opinion. Components of the Project that are proposed to be changed include decreasing the construction period to a 9-year schedule from a 25-year phased schedule and incorporation of opportunity based channel modifications to enhance stream function and habitat in the Guadalupe River. Channel modifications may include excavated east bank floodplain bench features, east and west bank biotechnical improvement, grade control structures, and other instream fish habitat improvement structures. The action area for the Project as a whole includes 6.4 miles of the upper Guadalupe River between Interstate Highway 280 and the Alamitos Drop Structure near Blossom Hill Road. The action also includes the four fish barrier removal project sites noted above, which are located in Guadalupe Creek and Alamitos Creek.

The process for development and design of the channel improvement modifications to enhance stream function are described in the Project's Waste Discharge Requirements and Water Quality Certification issued by the San Francisco Bay Regional Water Quality Control Board (Water Quality Certification). The Corps and SCVWD will conduct several studies described in Provision No. 32 of the Water Quality Certification and utilize the results of these studies in the development of reach specific channel modification designs. Modification designs will be reviewed by the GWIWG and 65 percent design plans for each reach will be submitted to the San Francisco Bay Regional Water Quality Control Board's Executive Officer for approval prior to construction. General descriptions of channel design modifications are as follows:

(a) Floodplain Benches: Opportunity based eastbank floodplain benches will be excavated in Reaches 6, 7, 8, 9 (at Pine Avenue and Malone Road), and 11A, between the active channel and the bypass. Actual locations and design of the benches will be based on site specific studies.

(b) West and Eastbank Improvements: Bank improvement methods that maximize the use of natural materials and grading of steep surfaces will be implemented on the east and west banks where unstable or steep banks can be modified to provide plantable surfaces and improve instream and stream-side habitat and water quality.

(c) Grade Control Structures: Grade control structures will be built to reduce channel incision and bank erosion. In addition, the grade control structures are expected to improve existing channel bed conditions by capturing gravel and cobble in sediment starved reaches.

III. DESCRIPTION AND STATUS OF THE SPECIES

This reinitiation of consultation will affect threatened Central California Coast steelhead (62 FR 43937; August 18, 1997). Species description, including life history, status, trend and likelihood of survival and recovery is detailed in NMFS April 18, 2000, biological opinion for the Project and is hereby incorporated by reference.

Although there is no historical account of Chinook salmon migrating and spawning in the Guadalupe River, fall-run Chinook salmon (*Oncorhynchus tshawytscha*) have occurred in the Guadalupe River watershed during the past decade (U.S. Army Corps of Engineers 2001b). The results of genetic analyses of these Chinook salmon to determine their origin has been inconclusive, but some genetic material is consistent with populations from the Sacramento-San Joaquin River system (Nielson 1995) including Merced and Feather River hatcheries (NMFS 1999). Additional information on genetic and life history traits of Guadalupe River Chinook salmon and their relationships with Central Valley and coastal Chinook salmon populations are necessary to confirm their affinity with a West Coast Chinook salmon Evolutionary Significant Unit. At present, Chinook salmon that occur in the Guadalupe River are not listed under the ESA.

On December 10, 2004, NMFS Southwest Region proposed critical habitat for two evolutionarily significant units (ESUs) of Chinook salmon and five ESUs of anadromous steelhead. The Guadalupe River and its watershed were excluded from the proposed designation (69 FR 71880).

IV. ENVIRONMENTAL BASELINE

In general, environmental baseline conditions today are as described in the NMFS April 18, 2000, biological opinion for the Project, and are hereby incorporated by reference.
In the four and half years since the issuance of the April 18, 2000, biological opinion, the status

of CCC steelhead in the action area has not substantially changed. The Guadalupe River within the action area remains heavily impacted by various agricultural activities, urbanization, and water regulation by reservoirs on tributaries. The channel has incised and large portions of the bank have been stabilized by hardscape materials. Riparian vegetation is limited to a narrow corridor along the inner banks in many areas and contains many non-native species. Water quality has been degraded by leaking underground tanks, urban runoff, and other sources on non-point pollution.

Habitat conditions within the action area are generally poor for steelhead rearing and spawning. Rearing habitat in the mainstem of the Guadalupe River is marginal during the summer months due to elevated water temperatures and the presence of warm-water predatory fish species. Existing overwinter habitat and outmigration conditions are also limited because the mainstem channel lacks habitat complexity and low velocity refugia during storm events. CCC steelhead are seasonally present in the action area. A few juveniles may be present during the Project's summer construction seasons. Adult steelhead migrate through the Guadalupe River during the winter months to access upstream spawning areas and juveniles outmigrate during the late winter and spring as smolts to access San Francisco Bay and the ocean. In the past spawning by steelhead has not been observed in the action area, but the restoration of lower Guadalupe Creek during 2002, immediately upstream of the action area, has improved spawning habitat suitability and may encourage future spawning and rearing by steelhead in Project reaches.

One minor change in baseline condition of the action area has occurred on the Guadalupe River and another at one of the Guadalupe Creek fish passage improvement sites. The SCVWD's stream maintenance program (SMP) constructed a bank stabilization project along 200 linear feet of the west bank of Guadalupe River upstream of Alma Street in 2002. The SMP work at this site consisted of removing 100 feet of obsolete sacked concrete rip-rap bank and replacing it with a biotechnical bank protection structure. The new structure is a log crib wall along the lower portion of the bank and geotextile and brush matting over compacted fill on the upper bank. The site was then planted with native vegetation. On Guadalupe Creek, the SCVWD completed one of the Project's proposed fish barrier modifications. At Stream Gage 43 on Guadalupe Creek, a 5-foot wide portion of an existing concrete apron was removed, a configured metal plate was installed over the concrete weir, and the downstream water surface elevation was increased by raising the elevation of an existing end sill. The resulting project has improved upstream passage conditions for adult and juvenile anadromous salmonids at this location.

V. EFFECTS OF THE ACTION

The purpose of this section is to identify the effects to CCC steelhead resulting from the proposed modifications to the Project. The other effects of the Project, as described in the original opinion, remain unchanged. A detailed description of these physical, chemical and biotic effects on threatened CCC steelhead was provided in the April 18, 2000, biological opinion and is incorporated here by reference and briefly summarized below.

A. Revised Construction Schedule

The original schedule for the Project included phased construction over a 25-year period to avoid creation of short-term impacts to riparian vegetation throughout the entire Project simultaneously. Construction would be done in phases so that the short-term impacts to riparian vegetation in one reach would recover prior to creating impacts in an adjacent reach. This phased approach was designed to minimize thermal warming of the Guadalupe River and, thus, minimize the potential for adverse affects to rearing and migrating juvenile anadromous salmonids. In this reinitiated consultation, the Corps and SCVWD propose to shorten the Project's construction period to approximately nine years. This will result in the removal of riparian vegetation throughout the entire Project area over a shorter time period.

To evaluate the effects on water temperature associated with a shortened construction schedule, the JSATEMP stream temperature model for the Guadalupe River was updated and used to compare construction schedules. The JSATEMP model predicts water temperature conditions throughout the Flood Project area by evaluating shade provided by riparian vegetation, topographic shade, ambient air temperature, and other factors. The construction schedule used in the thermal modeling covered 11 years, but with only 9 years elapsing from the time of the first mitigation plantings and shade impacts to the time of the last shade impacts. Therefore, the thermal modeling performed for the 11-year construction schedule applies to the proposed 9-year construction schedule, because all losses and replacement of riparian vegetation occur over the same time span and in the same sequence under both the 9 and 11-year schedules. Results of the JSATEMP model runs were presented in the July 23, 2003, memorandum from Jones and Stokes Associates, Inc. to the Corps and SCVWD. Prior to performing this comparison of construction periods, the JSATEMP model was recalibrated with current temperature data and the most recent vegetation conditions for the Guadalupe River.

The model under both construction schedules determined that Guadalupe River water temperatures in April and May are warmest in the upstream reaches of the Flood Control Project area[2] (near the Alamitos Drop Structure) and temperatures generally decrease with distance downstream. When comparing the results of the 11-year schedule to the 25-year schedule, the model indicated the 11-year schedule provides slightly cooler water temperatures in the upstream areas of the Project when compared to the 25-year schedule. Thus, the 11-year construction schedule could benefit rearing and outmigrating juvenile steelhead, because the upstream locations in the Flood Control Project area are experiencing the most stressful water temperatures in April and May (up to 70 degrees Fahrenheit in 25-year schedule). A temperature decrease of approximately 1 to 2 degrees Fahrenheit (F) in April and May would be expected to improve conditions for steelhead, because temperature values in the upstream locations are approaching stressful thresholds. Juvenile steelhead prefer water temperatures between 55 and 62 degrees F while temperatures in excess of 75 degrees F can be lethal (Reiser and Bjornn 1979).

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[2] The Flood Control Project area is a subset of the Project's action area, and does not include the stream reaches containing the fish passage structures that will be fixed.

The model predicts water temperatures will cool under both construction schedules by 4 to 10 degrees F in the downstream reaches of the Flood Control Project area (near Interstate 280). Although the 11-year construction schedule is predicted to slightly increase water temperatures in the downstream reaches (approximately 1 to 2 degrees F higher in April), water temperatures are cooler in this area and generally within a suitable range for juvenile salmonids during April and early May (generally between 56 and 62 degrees F). Over the long-term, water temperatures are expected to decrease as riparian mitigation plantings establish along the river banks.

Between the months of November and March, water temperatures are generally within a range suitable for rearing, spawning, and migrating steelhead due to ambient air temperatures. Thus, the length of the construction schedule does not affect habitat conditions for steelhead during this period. During the summer months (June through September) the Guadalupe River within the Flood Control Project area is generally too warm to support the rearing of juvenile steelhead. Thus, the length of the construction schedule is not expected to effect habitat conditions for the summer rearing of steelhead. In summary, the proposed revision of the construction schedule to a 9-year period is not expected to adversely affect steelhead or habitat conditions for steelhead in the Guadalupe River and may provide some minor water temperature improvements in the uppermost reaches of the Project area.

B. Channel Design Improvement Modifications

The Corps and SCVWD have revised the Project to include opportunity based channel improvements on the Guadalupe River. Channel improvement modifications will likely include excavated east bank floodplain bench features, east and west bank biotechnical improvements for bank stability, grade control structures, and other fish habitat enhancement structures. Goals of these modifications include improving bank stability, reducing streambed incision, increasing channel and riparian habitat, increasing fish habitat diversity and complexity, and decreasing required maintenance. Opportunities to include these features will be identified through several on-going studies regarding channel, soil and other conditions in the Guadalupe River. These features will be located and designed based on these studies prior to the start of construction in these reaches. The actual number, design, and location of these structures are not known at this time. Hydraulic modeling demonstrated that the excavated floodplain alone would not convey 100-year flood flows throughout the entire Project area. Thus, the bypass channels described in the original Project description remain.

The proposed channel modifications are expected to introduce and/or recover some degree of the Guadalupe River's natural function and self-sustaining physical and biological attributes. The re-establishment of a floodplain on portions of the east bank will further this goal. Some short-term losses of mature vegetation may occur, but reach specific designs are expected to minimize impacts to existing riparian vegetation. The re-establishment of floodplain areas combined with grade control and other in-stream structures are expected to begin the long-term recovery of the stream and its riparian community. Downcutting on the main channel will likely be reduced and instream habitat diversity and complexity should increase. Increased channel widths should reduce bank erosion and scour, which in turn is expected to decrease the amount of SCVWD channel maintenance activities, specifically bank protection projects.

Under existing conditions, the Guadalupe River channel in many Project reaches is a U-shaped channel with little instream structure. Water velocities are generally high during storm events and there are few areas of low velocity refugia for fish holding. High flows and the associated high water velocities are thought to dominate the channel from bank to bank, because there is little instream structure to dissipate velocities. As a result, it is likely that adult and juvenile anadromous salmonids have difficulty maintaining their location in the Guadalupe River channel during moderate and high storm events. The monitoring results of Chinook salmon radio-tracking studies in 2002-03 and 2003-04 in the Guadalupe River support this hypothesis. During storm events radio-tagged adult Chinook salmon moved considerable distances downstream and as stream flows dropped back to winter base levels, the fish moved back upstream (SCVWD 2003; SCVWD 2004). Proposed channel modifications are expected to create floodplain and other backwater areas that provide low water velocity refugia for fish holding under storm flow conditions.

Other benefits anticipated from the excavated floodplain areas and channel modifications are associated with the stream's geomorphic and hydraulic attributes. The periodic inundation of the floodplain benches adjacent to the river will create seasonal pools and sloughs for fish nursery areas. The floodplain will retain nutrients and sediments that would otherwise be swept downstream and lost from the system. Periodic flooding of the benches will promote and sustain a diverse age class distribution and composition of riparian-wetland vegetation. Floodplain areas will filter sediment, capture bedload and improve water quality. In general, these factors increase productivity and species diversity, which are reflected in increased populations and enhanced growth of many native fish species (Johnson *et al.* 1976; Brinson *et al.* 1981; Johnson 1992; Galat *et al.* 1994; Hesse 1994). In summary, the proposed addition of channel modifications in the Guadalupe River is expected to benefit steelhead and their habitat conditions in the Project area.

Construction of some of the channel design improvement structures will require dewatering of work sites on the Guadalupe River. As with all Project instream construction, streamflow diversion and dewatering is limited to the period between June 1 and October 15. Under some limited circumstances, streamflow dewatering may commence during May if the conditions presented in term and condition 1(d) of the incidental take statement attached to the April 18, 2000, biological opinion are met. In general, steelhead migration will be completed prior to construction and dewatering of work sites. Within the Project area, conditions are marginal for summer rearing of steelhead. Streamflows are typically low and warm (in excess of 70 degrees F); streambed substrate is primarily silt and fine material; and the channel lacks in-stream structure and diversity. Therefore, few juvenile steelhead are likely to be collected during the fish relocation and stream dewatering activities associated with construction of these channel improvement modifications. Impacts associated with fish collection and relocation for in-stream construction are described in the April 18, 2000, biological opinion and are incorporated here by reference.

C. Summary of impacts analyzed in the April 18, 2000 Biological Opinion

The effects of the Project already analyzed include construction in the stream channel, on stream banks, and on the floodplain. Streamflow diversion, workspace dewatering and the temporary loss of riparian vegetation will occur with construction. Steelhead juveniles will be adversely affected during fish relocation activities, exposure to turbid water conditions during construction, and temporary increases in stream temperatures. Operation of the Project's flood bypass channels is expected to divert stream flow and fish during moderate and high flood events out of the channel and then return these flows and fish to the channel at a downstream location. Some stranding of juvenile steelhead may occur during the operation of the flood bypasses. The four off-site mitigation projects are expected to improve upstream fish passage on Guadalupe Creek and Alamitos Creek.

VI. CUMULATIVE EFFECTS

Cumulative effects are defined in 50 CFR 402.02 as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation". Future Federal actions will be reviewed through separate section 7 consultation processes and not considered here. Non-Federal actions that require authorization under section 10 of the ESA will be evaluated in separate section 7 consultations and not considered here.

Similar to the environmental baseline, NMFS has determined that cumulative effects in and near the action area have not changed in any appreciable way since the issuance of the April 18, 2000, biological opinion. Therefore that opinion's review of cumulative effects is incorporated here by reference. Cumulative effects present in the April 18, 2000, biological opinion include roadway improvement projects, pedestrian and bicycle trail construction projects, the San Jose International Airport Expansion Project, and other activities associated with population growth in the heavily urbanized area.

VII. INTEGRATION AND SYNTHESIS OF EFFECTS

This supplemental biological opinion evaluates the effects of the Project's revised construction schedule and the addition of channel improvement modifications on CCC steelhead. The effects analysis considers the population status of CCC steelhead, the existing environmental baseline conditions within the affected area, and the effects of the entire Project on the likelihood of survival and recovery of CCC steelhead. CCC steelhead are at a moderate risk of extinction. They have experienced population declines and habitat degradation continues throughout the range of the ESU. However, they have maintained a wide distribution and have experienced little fragmentation.

Habitat conditions within the action area are generally poor for steelhead rearing and spawning. CCC steelhead are seasonally present in the action area. A few rearing juveniles may be present. Adult steelhead migrate through the Guadalupe River during the winter months to access upstream spawning areas and juveniles outmigrate during the late winter and spring as smolts to access San Francisco Bay and the ocean.

The proposed shortening of the Project's construction schedule is expected to alter the sequence and rate of short-term impacts on riparian vegetation along the Guadalupe River. However, modeling of projected water temperature conditions suggests conditions for rearing and smolting juvenile steelhead will improve slightly in the uppermost portion of the Project area under the 9-year construction schedule when compared to the 25-year construction schedule. This upstream area typically contains stressful temperature conditions for juvenile steelhead during late April and May. Although minor, the projected water temperature improvements in this area could benefit steelhead rearing and outmigration.

The second proposed revision to the Project involves the addition of opportunity based excavated floodplain benches on the east bank of the Guadalupe River and other channel improvements to restore natural stream functions and improve habitat conditions. These channel improvement modifications, such as the excavated east bank floodplain bench feature, are expected to introduce and/or recover some degree of the Guadalupe River's natural function and self-sustaining physical and biological attributes. The proposed channel improvements will be designed to enhance rearing, spawning and migration conditions for steelhead through increased habitat diversity and complexity in the mainstem Guadalupe River.

Construction associated with the channel improvements is expected to injure and kill some steelhead during dewatering, but this additional in-channel work will conform to the best management practices developed for all other in-stream Project construction. Death or injury associated with the channel improvement structures and all other in-stream construction for the

Project are not expected to rise to a level where the numbers, distribution, or reproduction of CCC steelhead populations in the Guadalupe River Watershed will be appreciably reduced. NMFS expects the basin's salmonid populations to be resilient to these small potential losses because: 1) habitat conditions for salmonid migration, spawning, and rearing have been improved in the Guadalupe River watershed by other SCVWD projects during the past 5 to 10 years, likely resulting in increasing juvenile production, and 2) the duration and timing of the construction will expose few members of the juvenile population in the Guadalupe River watershed to harmful effects of stream de-watering. The likelihood of survival and recovery of this population is, therefore, not expected to be appreciably reduced. By extension then, the survival and recovery of CCC steelhead at the ESU level is not likely to be appreciably reduced.

VIII. CONCLUSION

After reviewing the best available scientific and commercial data regarding the current status of the threatened CCC steelhead and the current condition of the environmental baseline in the action area, and cumulative effects, it is NMFS' biological opinion that the proposed revision of the construction schedule and the addition of channel improvement modifications for the Upper Guadalupe River Flood Control Project are not likely to jeopardize the continued existence of threatened CCC steelhead.

IX. INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and Federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. NMFS further defines "harm" as an act that actually kills or injures a protected species (64 FR 60727). Harm can arise from significant habitat modification or degradation where it actually kills or injures protected species by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and 7(o)(2), taking that is incidental to and not intended as part of the proposed action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with this incidental take statement.

The measures described below are nondiscretionary, and must be undertaken by the Corps and the SCVWD for the exemption in section 7(o)(2) to apply. The Corps has a continuing duty to regulate the activity covered by this incidental take statement. If the Corps: (1) fails to assume and implement the terms and conditions, or (2) fails to require SCVWD to adhere to the terms and conditions of the incidental take statement, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Corps and SCVWD must report the progress of the action and its impact on the species to NMFS as specified in the incidental take statement (50 CFR §402.14).

For the sake of clarity, the incidental take statement attached to the April 18, 2000, biological opinion is presented below in its entirety. Additions to the incidental take statement associated with this supplemental biological opinion are noted as "new text". Omissions to the incidental take statement associated with this supplemental biological opinion have been noted with "strike-out". This incidental take statement supersedes the incidental take statement attached to the April 18, 2000, biological opinion.

A. Amount or Extent of Take

NMFS anticipates incidental take of steelhead will be difficult to detect for the following reasons: the inherent biological characteristics of aquatic species such as steelhead, the dimensions and variability of the Guadalupe River system, and the operational complexities of the phased flood control construction activities. However, the level of take of this species can be anticipated by the temporary loss of an estimated 4,886 linear feet of overwater riparian vegetation and 1,720 linear feet of undercut banks[3] because these losses adversely affect streambank rearing and foraging habitat for steelhead and may result in reduced survival. In addition, some fish may be stranded during construction (and relocated). NMFS has assumed that this will be a rare event that will affect a few fish, probably less than ten fish per construction season. If stranded fish are relocated, it is likely that most will survive (their relocation thereby minimizing impacts to the population). NMFS also assumes that the proposed mitigation will be fully implemented and remain successful over the life of the project. Take is not expected to occur from the bypass channel operations.

B. Effect of the Take

In the accompanying supplemental biological opinion, NMFS determined that this level of anticipated take is not likely to result in jeopardy to the CCC steelhead ESU.

C. Reasonable and Prudent Measures

NMFS believes the following reasonable and prudent measures are necessary and appropriate to minimize impacts of incidental take of threatened CCC steelhead caused by activities related to the upper Guadalupe River Flood Control Project:

1. Avoid and minimize instream construction impacts to the Guadalupe River ecosystem.

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[3] Losses for shaded riverine aquatic cover and undercut banks will be fully mitigated.

2. Minimize the extent of temporary and permanent changes to instream and riparian habitat and ensure that proposed mitigation measures used to replace losses of riparian vegetation including SRA cover and undercut banks are fully successful.

3. Use a fisheries biologist for the purposes of monitoring the affected area, and for removing and relocating steelhead from the affected area.

4. Implement adequate control measures to avoid or minimize sediment, turbidity and pollutant inputs to the Guadalupe River.

5. Prepare and submit monitoring reports annually to document status of construction and mitigation activities.

6. **New text:** Ensure the design improvement modifications for Project reaches in the Guadalupe River enhance natural stream functions and benefit anadromous salmonid habitat.

7. **New text:** Ensure the fish passage improvement projects are properly designed for adult and juvenile steelhead migration.

8. **New text:** Ensure the flood bypasses are properly functioning and monitor for fish stranding.

D. Terms and Conditions

The Corps is responsible for the following Terms and Conditions that implement the reasonable and prudent measures described above. These Terms and Conditions are intended to minimize incidental take of steelhead associated with the Upper Guadalupe River Flood Control Project.

1. The following Terms and Conditions implement Reasonable and Prudent Measure No. 1.

    A. The Corps and SCVWD shall isolate each workspace from flowing water for the purpose of avoiding heavy equipment in flowing water, sedimentation, turbidity, and direct effects to steelhead. Prior to construction activities, diversion materials shall be installed (e.g., sandbag cofferdams, straw bales) to divert streamflow away or around each workspace. The diversion shall remain in place during the project construction, then removed immediately after work is completed.

    B. The Corps and SCVWD shall ensure and maintain a corridor for unimpeded passage of steelhead during construction of the project action.

C. When practical, the Corps and SCVWD shall use existing points of ingress or egress, or perform work from the top of the river bank, for the purpose of avoiding work and heavy equipment in flowing water, and disturbing riverbank, vegetation, and instream habitat.

D. The Corps and SCVWD shall confine in-channel construction activities to the summer low-precipitation period (April 15 - October 15), with the condition that construction requiring stream dewatering, stream crossing or work in the channel invert not commence until May 1, assuming that two stream-monitoring criteria are met. The first is that a qualified fisheries biologist (see Term and Condition No. 3) survey the project area and verify the absence of juvenile steelhead for a minimum of three consecutive sampling days. The second is that average daily water temperatures exceed 64°F for a minimum of three consecutive days. Should stream-monitoring criteria not be met, channel invert work and stream dewatering will not be allowed until June 1.

E. Take appropriate measures to ensure that activities in Ross and Canoas (Creeks do not lead to increased sources of sedimentation or turbidity to the Guadalupe River.

F. A worker education program shall be undertaken on the importance of protecting steelhead.

2. The following Terms and Conditions implement Reasonable and Prudent Measure No. 2.

A. The Corps and SCVWD shall photograph the project area prior to and after each construction season for the purpose of developing a reference library of instream and riparian habitat characteristics.

B. The Corps and SCVWD shall ensure that losses of riparian vegetation are fully mitigated and ensure a revegetation success ratio of no less than 1:1 on the Guadalupe River. Losses for SRA cover shall be fully mitigated and ensure a revegetation success ratio such that there is no net loss of SRA. Based on a September 23, 1999 letter from Jim Ferguson, Santa Clara Valley Water District, to Mark Helvey, the District will plant an additional 8,462 linear feet of SRA in adjacent areas that will be used as a contingency in case of failure of any of the proposed mitigation plantings.

C. The Corps and SCVWD shall prepare a Mitigation and Monitoring Plan to address the replacement and re-establishment of riparian vegetation (including

SRA cover) and undercut banks. The plan shall be submitted to NMFS for review and approval before initiating construction. NMFS shall provide in writing either concurrence with the plan or notification to the Corps and SCVWD that plan modifications are necessary for acceptance.

D. The Corps and SCVWD shall implement a Vegetation Protection Plan to prevent the inadvertent loss of riparian vegetation above and beyond that necessarily resulting for project construction activities. The plan will also describe maintenance procedures to protect and enhance the riparian system. The plan shall be submitted to NMFS for review and approval before initiating construction. NMFS shall provide in writing either concurrence with the plan or notification to the Corps and SCVWD that plan modifications are necessary for acceptance.

E. All mitigation areas that have been set aside as compensation for project impacts resulting from this project or any other project (e.g., "Downtown Flood Control Project") will not be disturbed or impacted during construction activities (e.g., Reach A) and will be preserved in perpetuity.

3. The following Terms and Conditions implement Reasonable and Prudent Measure No. 3.

A. The Corps and SCVWD shall retain a fisheries biologist with expertise in the areas of resident or anadromous salmonid biology and ecology, fish/habitat relationships, and biological monitoring; and handling, collecting, and relocating salmonid species. The biologist will monitor activities prior to and during inchannel activities especially during temporary blockage or redirection of the flow of water through the use of cofferdams or culverts.

B. The biologist shall monitor placement and removal of channel diversions for the purpose of removing any steelhead that would be adversely affected. The biologist shall capture such steelhead and individuals stranded in residual wetted areas as a result of streamflow diversion and workspace dewatering, and relocate the individuals to a suitable location immediately upstream or downstream of the particular project area. One or more of the following NMFS approved methods shall be used to capture steelhead: dip net, seine, throw net, minnow trap, and hand. Electrofishing may only be used if NMFS has reviewed the biologist's qualifications and given approval. The biologist shall note the number of individual steelhead observed in the affected area, the number of individuals relocated, and the date and time of the collection and relocation.

C. The biologist shall monitor inchannel activities, instream habitat, and performance of sediment control/detention devices (see Term and Condition No. 4) for the purpose of identifying and reconciling any condition that could adversely affect steelhead or their habitat. The Corps and SCVWD and their contractors, upon notification for the biologist, shall halt the work activity causing the condition affecting steelhead and recommend measures for avoiding the condition. Work can resume when NMFS agrees that the proposed measures are appropriate for avoiding the condition.

D. The biologist shall contact NMFS (707-575-6050) immediately if one or more steelhead are found dead or injured. The purpose of the contact shall be to review the activities resulting in take and to determine if additional protective measures are required.

4. The following Terms and Conditions implement Reasonable and Prudent Measure No. 4.

A. Erosion control and sediment detention devices shall be incorporated into the project and implemented at the time of the project action. These devices shall be in place during the project action, and after if necessary, for the purpose of minimizing fine sediment and sediment/water slurry input to flowing water. The devices shall be placed at all locations where the likelihood of sediment input exists.

B. At the time of the project action, the Corps and SCVWD shall prepare and implement a Storm Water Pollution Prevention Plan as part of the National Pollutant Discharge Elimination System (NPDES) General Construction Activity Storm Water Permit to avoid or minimize increased sediment and turbidity impacts. These plans will be reviewed and approved by NMFS.

C. At the time of the project action, the Corps and SCVWD shall prepare and implement a Toxic Material Control and Spill Response Plan to avoid or minimize increased pollutant inputs. These plans will be reviewed and approved by NMFS.

D. All water within the construction site shall be pumped off-site or into a settling basin or tank and not directly into the downstream channel.

E. All pilings, support piers, abutments and rock materials shall be non-toxic. Any combination of wood, plastic, concrete, or steel is acceptable, provided that there are no toxic coatings, chemical antifouling products, or other treatments that may leach into the surrounding environment.

5. The following Terms and Conditions implement Reasonable and Prudent Measure No. 5.

   A. The Corps and SCVWD shall provide a written construction monitoring report to NMFS within 30 working days following completion of each construction season (no later than November 30). The report shall include the number of steelhead killed or injured during the project action and biological monitoring; the number and size of steelhead; any effect of the project action on steelhead that was not previously considered (reinitiation of consultation would be required, see section IX, item 2 of the Biological Opinion); photographs documenting compliance with Reasonable and Prudent Measures No. 1 and 4; and, photographs taken before and after work activity.

   B. The Corps and SCVWD shall provide a written report describing results of their mitigation activities to NMFS on a schedule that is developed in the Mitigation and Monitoring Plan. At the very minimum, the report shall include a description of the locations planted or seeded, the area (ft^2) revegetated, a plant palette, planting or seeding methods, performance or success criteria, and pre- and post-planting color photographs of the revegetated area.

   C. The Corps and SCVWD shall provide a written report describing results of their vegetation Protection Plan to NMFS on a schedule that is developed during the adoption of the plan.

   D. All reports, proposed plans, and annual updates shall be submitted to: Protected Resources Division Supervisor, NMFS, Santa Rosa Area Office, 777 Sonoma Avenue, Room 325, Santa Rosa, California; (707) 575-6050; Fax (707) 578-3435.

6. **New text:** The following Terms and Conditions implement Reasonable and Prudent Measure No. 6.

   A. **New text:** The Corps and SCVWD shall submit the reach-specific plans for the Design Improvement Modifications (as described in the Project's Water Quality Certification) at the 65 percent design level to NMFS for review and approval prior to initiation of construction.

   B. **New text:** The 65 percent design plans for each reach of the Project shall be submitted to: Protected Resources Division Supervisor, NMFS, Santa Rosa Area Office, 777 Sonoma Avenue, Room 325, Santa Rosa, California; (707) 575-6050; Fax (707) 578-3435.

7. **New text:** The following Terms and Conditions implement Reasonable and Prudent Measure No. 7.

   A. **New text:** The Corps and SCVWD shall submit the design plans for each fish passage improvement project to NMFS for review and approval prior to initiation of construction.

   B. **New text:** The design plans for each fish passage improvement project shall be submitted to: Protected Resources Division Supervisor, NMFS, Santa Rosa Area Office, 777 Sonoma Avenue, Room 325, Santa Rosa, California; (707) 575-6050; Fax (707) 578-3435.

8. **New text:** The following Terms and Conditions implement Reasonable and Prudent Measure No. 8.

   A. **New text:** The Corps and SCVWD shall perform visual surveys in each flood bypass channel during the first and second winter following its construction. Surveys for stranded and dead fish and isolated pools shall be performed immediately after flood-waters have receded from the bypass channel. NMFS shall be contacted within 24 hours if one or more steelhead are observed injured, stranded or killed within the flood bypass channels. If fish are stranded they shall be immediately relocated to suitable habitat within the Guadalupe River. Dead salmonids shall be retained (frozen) until the receipt of further instructions from NMFS staff.

   B. **New text:** The results of these surveys in the flood bypasses shall be submitted no later that June 1 of each year to: Protected Resources Division Supervisor, NMFS, Santa Rosa Area Office, 777 Sonoma Avenue, Room 325, Santa Rosa, California; (707) 575-6050; Fax (707) 578-3435.

X. CONSERVATION RECOMMENDATIONS

All conservation recommendations described in the April 18, 2000, biological opinion still apply to the supplemental biological opinion and are incorporated here by reference.

XI. REINITIATION NOTICE

This concludes formal consultation on the actions outlined in the project proposal. In addition to the reinitiation events noted above, reinitiation of formal consultation is required where discretionary Federal involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered in this opinion; (3) the action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action (50 CFR 402.16). In instances where the amount or extent of incidental take is exceeded, formal consultation shall be reinitiated immediately.

XII. LITERATURE CITED

Brinson, M. M., B. L. Swift, R. C. Plantico, and J. S. Barclay. 1981. Riparian ecosystems: their ecology and status. U.S. Fish and Wildlife Service. Biological Services Program. FWS/OBS-81/17.

Galat, D. L., J. W. Robinson, and L. W. Hesse. 1994. Restoring aquatic resources to the lower Missouri River: issues and initiatives. Prep. for the Scientific Assessment and Strategy Team (SAST) of the Interagency Floodplain Management Review Committee, EROS Data Center, Sioux Falls, SD.

Hesse, L.W. 1994. Flora and fauna of the Missouri River downstream from Fort Randall Dam to the mouth as they relate to the alteration of the hydrosystem. Prep. for the Scientific Assessment and Strategy Team of the Interagency Floodplain Management Review Committee. EROS Data Center, Sioux Falls, SD.

Johnson, W. C. 1992. Dams and riparian forests: case study from the Upper Missouri River. Rivers 3(4):229-241.

Johnson, W. C., R. L. Burgess, and W. R. Keammerer. 1976. Forest overstory vegetation and environment on the Missouri River floodplain in North Dakota. Ecological Monographs (1976) 46:59-84.

Reiser, D.W., and T.C. Bjornn. 1979. Habitat requirements of anadromous salmonids. *In*: Influence of Forest and Rangeland Management on Anadromous Fish Habitat in the Western United States and Canada. W.R. Meehan, editor. U.S. Department of Agriculture Forest Service General Technical Report PNW-96.

Santa Clara Valley Water District (SCVWD). 2003. Chinook radio tracking pilot report, Guadalupe River watershed 2002-2003. June 2003.

Santa Clara Valley Water District (SCVWD). 2004. Chinook radio tracking report, Guadalupe River watershed 2003-2004. November 2004.